



TDEC Response to Comments on the *Guidance for Making Hydrologic Determinations* and Field Data Sheet

Preface

The Division received approximately 160 technical comments on the HD Guidance document during the public comment period (Oct 15 – Nov 30, 2019). In addition we received numerous comments pointing out errors in spelling, spacing, punctuation, and other minor formatting issues. Almost all of the comments received were from Qualified Hydrologic Professionals (QHPs) or QHPs-in-Training. The majority of comments were specific, substantive, and knowledgeable, and have contributed significantly to the improvement of the Guidance. The Division greatly appreciates the time and effort that went into these comments.

All comments received (excepting most of those involving typos/formatting issues) are provided below, organized by section of the Guidance Document.

Note: Comments formatted in *italics* represent direct quotations from the commenter. Non-italicized comments indicate that the comment was paraphrased for brevity or clarity (some comments received, for example, consisted of track changes to the draft Guidance), or represent clarifying insertions to a direct quotation.

Introduction

1. **Comment:** Commenter believes the 2nd paragraph in the Introduction under Purpose of this Manual (“The bulk of this document...”) is redundant and restates the preceding paragraph. (para)

Response: The Division feels that both paragraphs are pertinent to an external reader and will retain both.

2. **Comment:** Commenter suggests that the 2nd sentence in the first paragraph under Limitations should be moved under the Submission of Hydrologic Determinations section, “...*since these are examples of when submitting an HD isn’t appropriate*”. (para)

Response: The Division feels that this sentence under the heading of Limitations making clear the intent of the Guidance is appropriate.

History of DWR Hydrologic Determinations

There were no comments received on this section of the document.

Submission of Hydrologic Determinations

3. **Comment:** *Suggest adding language to the bottom of the pg. 9 ‘Submission of Hydrologic Determinations’ section to clarify the following item:*
 1. *Only those submittals involving a proposed alteration to a water feature may qualify for treatment under the rule as referenced in [0400-40-17-.04]:*

Response: TCA 69-3-108(r) states that “A person desiring to alter a specific water of the state may request a determination from the commissioner that it is a wet weather conveyance and submit a report from a [QHP] in support of the request.” This wording does not suggest that a person who *may* seek to alter a watercourse, but is not yet certain, *cannot* submit a report seeking treatment under the rule. In many cases the person will not be able to prepare a site plan including specific alterations until they have confirmation from the Division of whether the features on their site are jurisdictional.

4. **Comment:** Please revise the Requesting Treatment Under Statute checklist to be more consistent with the language in 69-3-108(r) and 0400-40-17-.04. Commenter specifically references contact info of applicants, submittal of photographs of the area proposed to be altered and the immediate up-channel and down-channel areas, and limiting the length of wet weather conveyance determinations to the extent of the propose alteration. (para)

Response: The checklist already specifies the submittal of photographs, including up and down from the segment. The checklists will be edited to use the term “contact info”, which is broader and more modern than ‘name, address, phone number’. A sentence limiting the length of determinations to include only the extent of the proposed mitigation is more appropriately addressed in the Guidance document.

5. **Comment:** *The new section in the guidance dedicated to ‘how to submit a hydrologic determination’ is a great idea. Now that we are formally recognizing that there are two types of official submittals, this is an opportunity to further outline (or create) differences between the two types of submittals:*

Standard Submittal: *(E.g. “Not requesting treatment under the rule”)... analogous to a ‘Complete Inventory of Aquatic Resources Report’ and used during the planning stage to help the developer, consultants, and reviewers accurately determine permitting requirements and reduce the time it takes to obtain a Notice of Coverage.*

Under the Rule Submittals: *Used when a person desiring to alter a specific water of the state needs to quickly determine (within 30 days) whether a permit will be required for a proposed alteration to a specific water feature. EFOs could treat these as extremely high priority which would result in a quick turn around and better customer service.*

Response: The Division agrees with the commenter. Language to this effect will be added under this section of the Guidance.

6. **Comment:** *On the Hydrologic Determination Standard Submittal can it be specified that a submittal must include everything on the checklist or add language that says incomplete applications will slow down the permitting process?*

Response: The Division agrees that some discussion of the review process is appropriate in this section. Language will be added to emphasize that the submission of incomplete information will result in the delays in processing.

7. **Comment:** *A process guidance document should be developed that includes the submittal guidelines, checklists, de-certification process and wetland review requirements.*

Response: Checklists and similar materials will be moved to an appendix. The section on Submission of Hydrologic Determinations will be expanded. A sentence will be added recommending that submissions include all wetlands/water features on a site to allow for more efficient and timely site review.

8. **Comment:** *In the submittal documents it should specify that the HD submittal needs to be submitted separately from any associated CGPs or ARAPs.*

Response: A sentence will be added encouraging separate submittals, but the Division cannot require this under rule.

9. **Comment:** *If submittals are emailed to a program coordinator or manager directly, we should require a confirmation of receipt before the review timeline begins.*

Response: The Division's review timeline begins at the date when the submittal is received in an EFO or the NRU and stamped with that date, as is customary with all submittals from the public. Problems with communication and tracking are internal process issues and not part of guidance.

10. **Comment:** *Move [embedded checklists] to appendix rather than have small illustrations.*

Response: The Division concurs. The current examples in Figure 1 are difficult to read, poorly reproduced, and cannot be copied for use. See also response to Comment #7.

Definitions

11. **Comment:** *Add "process discharge" to the definitions sections and clarify what is meant by "process discharge" in the Primary Field Indicator #1 section to prevent it from being misapplied.*

Response: The Division agrees. An expanded definition for process discharge will be added under Primary #1.

12. **Comment:** *Should we add Bankfull to the definitions section?*

Response: Bankfull is defined on page 46 of the document under Active Floodplain. It is a common term in hydro-geomorphology. The Definitions section in this Guidance is expressly limited to key regulatory terms specific to jurisdictional status under the statute and rule.

13. **Comment:** *Commenter suggests deleting the first part of sentence 1 under Definitions as unnecessary language: ~~Although there are many scientific terms and definitions associated with stream hydrology and the various related sciences, the TDEC standard procedures for hydrologic determinations focus on jurisdictional status...~~ (para)*

Response: The Division believes it is important to state that the Definitions section in this Guidance is by design limited to those key regulatory definitions that are specific to the Statute and Rules pertaining to WWCs.

14. **Comment:** *Page 11: Rule #s need to be changed to match the new rule numbers.*

Response: This oversight will be corrected.

General Concepts

15. **Comment:** Commenter suggests deleting the last clause in sentence 1 under General Concepts: *...~~as well as the applicable regulatory language and definitions involved in jurisdictional status.~~* (para)

Response: The intent of the clause is to make clear that HD procedures are based on both the science of natural processes AND the Divisions regulatory jurisdiction. The last part of this sentence will be revised in the interests of clarity.

16. **Comment:** Commenter suggests deleting the first sentence in paragraph 3 under General Concepts: *This Guidance is intended to establish a standard framework for all professionals involved in making HDs in Tennessee.* (para)

Response: The Division agrees that this sentence is redundant to language in the Introduction, and it will be deleted.

17. **Comment:** Commenter suggests the following edits to sentence 2 in paragraph 3 under General Concepts: *Professional experience in performing HDs ~~in general,~~ and specific knowledge of the nature of regional watercourses and watersheds ~~are~~ is critical in assuring that accurate determinations are made.* (para)

Response: The words ‘in general’ will be deleted as suggested. The plural verb ‘are’ is linked to dual nouns, ‘professional experience’ and ‘specific knowledge’, and is correct.

18. **Comment:** Commenter suggests adding a statement to the end of paragraph 3 under General Concepts: *However, this Guidance is not intended to override an investigator’s best professional judgement.* (para)

Response: The Division agrees that some mention of BPJ is appropriate here. Paragraph 3 will be revised accordingly.

General Hydrologic Determination Guidance

19. **Comment:** *Page 14: One inch of precipitation in 24 hours, should this be where “Significant rainfall event” is defined*

Response: The Division agrees that there is an apparent contradiction between this bullet and the definition offered under Indicator 15. Rule 0400-40-03-.05 specifies under Primary Indicators (item v) that “Field investigations for [HDs] should not be conducted if a one-inch precipitation event in 24 hours has occurred in the area of investigation within the previous 48 hours.” The wording in this bullet will be edited to more clearly reflect this. A sentence will also be added stating, “In addition, HDs conducted within 48 hours of any significant precipitation can affect the accuracy of the determination and open it to greater question, and therefore are strongly discouraged. A definition of ‘significant precipitation’ will be added under Indicator 15.

20. **Comment:** Commenter suggests deleting bullet #9 on page 15 under General Hydrologic Determination Guidance as redundant to language already stated under General Concepts: *The HD standard procedures described in this manual have been designed...* (para)

Response: The Division agrees that this bullet may be redundant to language in the General Concepts section, but elects to retain it under General HD Guidance.

21. **Comment:** Commenter proposes the following language to replace the last paragraph under General Hydrologic Determination Guidance, as being more clear and definitive (para):

The field investigative process relies on the scientific principle that watercourses carrying surface flow for extended periods of time are more likely to develop certain physical, hydrological, or ecological characteristics that are absent, or diminished, in watercourses that only carry flow in direct response to rainfall. These characteristics are considered indicators that a watercourse may be jurisdictional. The greater the prevalence and prominence of indicators associated with the watercourse, the more likely the watercourse is a jurisdictional stream and not a WWC. Some indicators are considered definitive and determine a watercourse to be a stream in all but the most anomalous situations (see “Primary Field Indicators” section below).

Response: The Division finds this suggested language to be an improvement over the existing paragraph, and will utilize a version of it – thank you.

Determining “Normal Weather Conditions”

22. **Comment:** *Page 18: Is it necessary for the new Number 4 to be a separate step? Or should it be under Number 2?*

Response: The Division considers the determination of observed precipitation (a necessary step) and the comparison of current flows to historic flows where the information is available (a helpful but non-mandatory practice) to be two separate action items.

23. **Comment:** *Pg 18. Normal Weather Conditions: #4 doesn't seem to fit here – we're describing a specific process and calculations based on precipitation data used to determine whether or not weather conditions are normal when there is a question. Move 'Where available, check nearest USGS on-line gauge for comparison to long-term median flows.' to the section covering the 'variety of on-line resources' available such as the palmer drought index, cocorahs, etc.*

Response: The Division agrees and will move item 4 at the end of page 18 to the end of the 2nd paragraph detailing on-line resources.

24. **Comment:** *P. 18: “4) Where available, check nearest USGS on-line gauge for comparison to longterm median flows.” While it may be helpful to determine if the current gauged flow is close to a long-term average, it doesn't take seasonal variability into account. Also, most USGS gauges are on perennial streams. Comparing that hydrology to a reach that may be a wet weather conveyance or intermittent stream may not be helpful either. It seems like a time-consuming task for something that may or may not be helpful. [Also – hyphen.]*

Response: Division staff often find it useful to check the nearest gauge to see if the hydrograph is falling or has stabilized after big rain events, or to see if flows increased in the area following an event. It is not time-consuming, involving nothing more than clicking on the USGS page and looking for the nearest gauge. This language will be moved to page 16 under on-line resources to make it clear this is not a mandatory step.

25. **Comment:** *P.20: More helpful would be to include further instruction on using the National Oceanic and Atmospheric Administration (NOAA) Advanced Hydrologic Prediction Service (AHPS) for comparing the last 90 days' departure from normal. This is less time consuming, and more instructive than the current Guidance, which includes standard deviations from an older dataset. The recent HD refresher conducted at Montgomery Bell State Park included instructions on using the AHPS site. I would recommend updating the Guidance to include instructions on using the AHPS to look at Percent of Normal over the last 90 days, and include an acceptable range (90-125%) for using only this analysis in the HD process.*

Response: The Division agrees and the language in this section will be updated considerably.

26. **Comment:** *Normal Weather, page 22- It looks like in the guidance description of precipitation is “very wet” or “drought” but on the HD sheet its described as "abnormally wet, elevated, average, low, abnormally dry." Could I check "elevated" if I am on the wet end of normal, i.e., 14, or would the value need to be 15 to check "elevated"?*

Comment: *The table does not reflect the terms used on the HD form such as “abnormally wet” or “elevated”. TDOT recommends aligning the HD form terms with the Hydrologic Determination Guidance terms for consistency.*

Response: The language will be updated to make the terminology on the field form and Guidance document congruent. The term ‘elevated’ is meant to equate with the previous term ‘wet’. The value does not need to be 15 for you to indicate precipitation as ‘elevated’. The use of the term ‘abnormally wet’ should be reserved to mean ‘outside normal weather conditions’

27. **Comment:** *First weblink on page 16 does not work.*

Response: Thank you – link will be updated.

28. **Comment:** *Page 19, Normal Weather Conditions Table 1: Form needs a space for Standard Deviation. Should the columns have units? There should be a fillable blank for station location, month, and year. (para)*

Response: Table 1 will be expanded as requested and moved to an appendix.

29. **Comment:** *Commenter suggests that writing the term “normal weather conditions” in quotation marks is both inconsistent throughout the text and unnecessary. (para)*

Response: The Division agrees that the usage is inconsistent thru the text and will correct.

30. **Comment:** *Commenter proposes the following language revision to replace paragraph 3 under Determining “Normal Weather Conditions”:* (para)

If the investigator believes the HD is being conducted during weather/climate conditions that are significantly drier or wetter than normal for the previous three month period, the following procedure should be used to document whether or not the HD was conducted under what the standard HD procedure considers normal weather conditions.

Response: The Division finds this language to be an improvement and will utilize a version of it – thank you.

31. **Comment:** Commenter suggests providing a blank version of Table 1 on page 19, rather than a filled-in example. (para)

Response: A blank version of Table 1 will be added to an appendix.

32. **Comment:** Commenter recommends that an image be inserted into this section of a drought monitor showing a 90-day departure from normal, and that information on how to record this on the HD score sheet be added. (para)

Response: A link to the drought monitor website is already provided on page 16. QHPs may append any pertinent information to their HD submittal as needed.

33. **Comment:** *Commenter suggests deleting Figure 2 on page 20 as unnecessary, and provide instead the link to this site.*

Response: The Division prefers to retain Figure 2. The link is already provided.

Hydrologic Determination Field Data Sheet and Methodology

34. **Comment:** Page 21, 1st paragraph: Commenter suggests that the term ‘indicators’ be used consistently throughout the document, rather than using the term ‘characteristics’ interchangeably. (para)

Response: The Division agrees and will use ‘indicators’ throughout the document.

35. **Comment:** Commenter proposes to delete paragraph 2 on page 21 of this section as being redundant and unnecessary. (para)

Response: The Division agrees that the first sentence in paragraph 2 is redundant. This paragraph will be revised accordingly.

36. **Comment:** Three commenters pointed out that the Field Data Sheet should be updated to read “Version 1.5”.

Response: This oversight will be corrected – thank you.

37. **Comment:** *Field Data Sheet: 1) Named Waterbody space insufficient to write [example] “Unnamed Tributary to West Prong Little Pigeon River” - please provide more space. 2) Blanks with too much space include watershed size, previous rainfall, and surrounding land use.*

Response: The Division agrees and will attempt to utilize the meta-data spaces more efficiently.

38. **Comment:** *Field Data Sheet: Topo name, soil type source, and “photos yes or no” are all unnecessary.*

Response: The spaces for USGS quad and Photos will be deleted. The box for soil type and source will be retained.

39. **Comment:** *In regard to the new TDEC hydrologic determination forms, it would be helpful to have the forms available in electronic format with fillable fields for ease of reading and scoring.*

Response: The Division agrees and will attempt to create a digital fillable version to be made available on-line.

40. **Comment:** *“20. Fibrous roots in streambed/ 21. Rooted plants in thalweg” These should be consistent, and the Guidance should reflect that consistency. Both indicators use “streambed” and “thalweg” when discussing the parameters. In fact, the Guidance only uses “thalweg” in the discussion on the fibrous roots indicator, and “streambed” is used on rooted plants.*

Response: Terminology in these sections will be revised to be consistent between Guidance and Field Sheet.

41. **Comment:** *Page 22: First paragraph on page, change “very wet” and “drought” to “abnormally wet” and “abnormally dry” to match field data sheet.*

Comment: *Page 22, First Bullet: Hydrologic Determination Field Data Sheet & Methodology: The source(s) of the information for determining recent and seasonal precipitation should be documented. Use of “very wet” or “drought” categories should only be used to designate conditions outside the range considered “Normal Weather Conditions” (see earlier section on evaluation of “Normal Weather Conditions”). The terms “very wet” and “drought” are not consistent with terminology used on HD form. TDOT recommends aligning the HD form terms with the Hydrologic Determination Guidance terms for consistency.*

Response: This oversight will be corrected – thank you.

42. **Comment:** *Field Sheet: “However, QHPs may choose...” [should] be changed to assessor. Since they don’t have to be a QHP to fill out the form or assess stream.*

Response: The Division agrees and this change will be made.

Primary Field Indicators

43. **Comment:** *“Defined bed and bank absent, vegetation composed of upland and FACU species” As above, many vegetated swales have species that aren’t categorized (NI). Where would these fit in? Is it composed solely of UPL and FACU species? Predominantly UPL and FACU species? Even the photos used to demonstrate the indicator seem to have some vegetation that would be FAC.*

Comment: *Primary Field Indicator 2. “...vegetation dominated by upland and FACU species” instead of composed of.*

Comment: *P. 22: “vegetation composed of upland and FACU species” Meaning the dominant species consist of FACU and UPL species only?*

Comment: *P. 22: “vegetation composed of upland and FACU species” While I understand the desire to ensure that a vegetated swale is not a linear wetland when making an HD, many vegetated swales have species that aren’t categorized (NI). Where would these fit in? Is it composed solely of UPL and FACU species? Predominantly UPL and FACU species? Even the photos used to demonstrate the indicator seem to have some vegetation that would be FAC.*

Response: The wording will be changed from “composed of” to ‘dominated by’. Photos will be re-checked for accuracy.

44. **Comment:** *Primary Indicator Presence of Fish: Hoping to see language about fish refuge in wet weather conveyances adjacent to large streams. Fish that seek refuge during high flows can get caught in stagnant pools which may improperly influence this indicator.*

Response: The commenter raises a valid point that a single or a few primary indicator fish can rarely become stranded in a puddle in a WWC due to flooding into fields, or washed down from a pond higher in the watershed. A sentence will be added to address this outlier.

45. **Comment:** *Would changing the Primary Field Indicators require a change to the Rules of TDEC?*

Response: Yes. The 9 primary indicators listed on the Field Data Sheet are taken directly from Rule 0400-40-03-.05(9-10).

46. **Comment:** Two commenters requested that the term ‘man-made’ on page 22 be changed to gender-neutral terminology. (para)

Response: The term “man-made” is also used in other places in the Guidance. The Rule uses the phrase “process or wastewater discharge or *other non-natural sources*”, so “non-natural” will be substituted for “man-made” in the Guidance text.

47. **Comment:** *P. 22: “Hydrologic feature exists solely due a process discharge” – Missing “to”*

Response: This edit will be made.

Secondary Field Indicator Evaluation

48. **Comment:** *Can the breakpoint for what is required to be a stream change? We frequently see channels that cannot score up to a 19 with secondary indicators in West Tennessee that are likely streams.*

Response: There is no reference to the number 19 in the statute or rule. The stream/WWC breakpoint could be changed (overall or for a given ecoregion, for example) via a 30-day PN for significant revisions to guidance, under (a)(5) of the Rule. To do so would require a compelling scientific basis.

49. **Comment:** Commenter proposes that the second sentence in paragraph 1 on page 32 be deleted as redundant (already stated elsewhere in the document). (para)

Response: The Division agrees that the sentence is redundant but prefers to retain it at this location at the beginning of Secondary Indicators.

50. **Comment:** Page 33, second paragraph, on the subject of scoring an indicator between categories (i.e., halfway between moderate and strong), commenter asks: *Are we still doing this? I thought we were moving away from this.* (para)

Response: It is acceptable, sometimes even desirable, to score halfway between categories in order to more accurately capture the channel characteristics. The language used implies that in-between scores should only be halfway between the two categories; assessors should not attempt to score at any finer resolution than this (rating a metric as 2.3 instead of 2.5, for example).

51. **Comment:** *Page 34: The new paragraph, the final sentence stating which indicators it can be used can be removed.*

Comment: *Pg 34, Pg 61, Pg 74. Suggest removing the biology indicators from this section and having a similar note for each category of secondary indicators (E.g. Geomorphology, hydrology, and biology each having a short preface addressing “things to be aware of” such as seasonal variations) Since many channels do not contain flow during the determination, some of the secondary metrics will require the investigator to envision how water would flow through the channel during wetter times, including the location of the thalweg. This is important in evaluating in-channel structure (3), braided channels (7), leaf litter in channel (16). fibrous roots in channel (20), and rooted plants in channel (21).*

Response: The Division finds the listing of specific Indicators in this sentence to be useful and prefers to leave it as written.

52. **Comment:** *Page 34. Spelling of ‘thalweg’ in line 3.*

Response: This correction will be made.

53. **Comment:** *General: All secondary indicators should have guidance for differentiating between the scoring categories. Even if it is solely using the descriptors utilized on the TDEC Field Guide, it is helpful to have these in the manual.*

Response: The Division agrees. This draft includes scoring guidance for all secondary indicators except #9 and #12. Specific scoring categories will be provided for these indicators – see also response to Comment #79.

54. **Comment:** *Secondary Indicators: Suggest removing the word ‘sometimes’ and ‘may’ from secondary indicators in all scoring categories and move those items to the narrative description describing the indicator. Where possible ensure language is consistent with Table 3 on Page 33.*

Strong – Large amounts of freshly deposited sand, silt, cobble, and/or gravel alluvium is present on bars, benches, or outside the stream channel. New point or medial bars may be forming.

Example:

Strong – Freshly deposited sand, silt, cobble, and/or gravel alluvium is easily observed on bars, benches, or outside the stream channel.

Response: There are some descriptors where the use of “may” or “sometimes” is appropriate. However in the case of the specific example given by the commenter, this language will be substituted under Indicator 8.

55. **Comment:** *The biological indicators section seems to be the most difficult part...to accurately score. Please provide more guidance and clarification to this section.*

Response: The Division agrees, and language will be strengthened in multiple biological Indicators. See responses to comments on specific Indicators in this section.

56. **Comment:** *The only thing I noticed that I would consider changing is the order of the scoring description for Crayfish, Bivalves, and Iron Oxidizing Bacteria. The descriptions are listed in order from Absent to Strong, where virtually all others are listed from Strong to Absent. It certainly doesn't change anything but could cause a little confusion.*

Response: The commenter is correct that the order of scoring categories is inconsistent across Indicators. This will be rectified.

57. **Comment:** *Indicator 1. Page 35: "Figure 7. Example of ill-defined bed and bank." When we are showing photo representations of features, we should use the terms in the guidance (i.e. absent, weak, moderate, or strong) in the descriptions of the photos.*

Response: Photo descriptors will be changed to match guidance categories where appropriate and unlikely to create further confusion. However, QHPs are cautioned against over-reliance on the photos. It is impossible for the Guidance document to provide truly representative photos of all categories for all indicators, or for all the different channel types across the state.

58. **Comment:** *Indicator 2. Page 37, last sentence – "Examples are provided in Figure 6." This appears to be a typo. It should be Figure 10.*

Response: This error will be corrected.

59. **Comment:** *Metric [Indicator] 3 – Riffle-Pool Sequences- In the definition of Strong add the language "5-7 channel widths or more frequent".*

Response: The wording "or more frequent" will be added to the parenthetical under Strong.

60. **Comment:** *Indicator 3. Figure 11. Bar and Bend Development: Is this figure supposed to be referencing weak/moderate/strong categories? For example, stage 1 is weak and stage 4 is strong. If not, then can you state that is not the purpose of the figure?*

Response: No. Figure 11 is meant to illustrate bar formation and the ways in which bars may be related to riffle/pool sequences.

61. **Comment:** *Indicator 3. Page 39: Figure 11. The figure seems like it would be more useful in the Bars and Benches Section (Page 48), than the Riffle-Pool sequences section.*

Response: The intent under Indicator 3 is to relate bar formation to riffle/pool sequences, which is helpful in scoring this indicator when the channel is dry. However, a reference to Figure 11 will be added under Indicator 6.

62. **Comment:** *Indicator 3. Page 38. In reference to the asterisk after 'step/pool' in line 2 of paragraph 2 under In-channel Structure – Riffle-Pool Sequences: TDOT recommends adding a footnote that defines the *. The meaning of the * is unclear to the reader.*

Response: The asterisk after 'step/pool' is explained at the top of page 40. The current text shows a bullet instead of a corresponding asterisk, making the reference unclear. This will be corrected.

63. **Comment:** Indicator 3. *Page 38: It has been stated by TDEC that riffles act as grade control structures and therefore count as both metrics for scoring. However, riffles don't always exhibit an abrupt change in grade or significant longevity. In order to negate double scoring, TDOT recommends discussing the differences between riffles and grade control features to avoid confusion. This could be easily added to the addition currently suggested for metric #3.*

Response: The Guidance makes no such reference to riffles as grade controls, nor is staff aware of ever stating that riffles act as grade controls. Riffles may sometimes be *associated with* grade control points. While the text specifies that headcuts are abrupt vertical drops in the channel grade that are actively eroding, grade controls are not necessarily vertical non-eroding drops. There should be no danger of double-scoring riffles vs. grade controls.

64. **Comment:** *Metric [Indicator] 4 - Soil Texture and Stream Substrate Sorting – Add the word “incised” after the phrase “cut down” in the Strong and Weak definitions.*

Response: The word “incised” was changed to “cut down” in this draft because “incised” has a more specific geomorphic meaning relating to channel instability and physical impairment, and was causing confusion.

65. **Comment:** Indicator 4. *Page 41: The second paragraph it mentions that soil texture/substrate sorting may be difficult to distinguish in bedrock streams in the Nashville Basin. I know it was mentioned in the meeting that Region specific information would be added. If so, then there needs to be some sort of guidance on how to handle this situation in this section. (Also the Table says Diamete, instead of Diameter. And the silt inches is missing the end part -0.004)*

Response: The typos will be corrected - thank you. The Division is aware that this and other Secondary Indicators that may be problematic in bedrock channels. Some additional guidance will be added in this version, and staff are currently working on new guidance specific to 71i bedrock channels (specific suggestions are welcome). It will be noticed for comment when ready.

66. **Comment:** Indicator 4. *Page 43: Figure 12, again should we use “Weak” instead of “Poor” under the photo?*

Response: Yes. This will be changed to “weak” as suggested.

67. **Comment:** Indicator 4. *p 41: “...natural bedload generated in-channel” -- is bothersome to me and will bother other geologists; the channel conveys its bedload, it does not generate it. Consider changing “generated” to “conveyed” or “transported.”*

Response: The Division does not agree that bedload is only conveyed by channels. Much of the bedload is generated by erosive forces from within the channel. The intent of the sentence is to distinguish between bedload created by recent human activities (unrelated to the hydrology of the channel) and the natural bedload. To avoid confusion, the sentence will be changed to “Sorting of material that has clearly been washed into the channel (road gravel, soil stockpiles, etc) should be scored lower than natural bedload”.

68. **Comment:** Indicator 5. *Active Floodplain: “the channel has been recently cut off from its floodplain” – Define “recently”? Last 6 months? Last 5-10 years?*

Response: Recent in this context means that the channel has not yet formed a new floodplain at its new elevation, and channel evolution is on-going. However, the words “recent” and “recently” will be deleted to avoid confusion.

69. **Comment:** Indicator 5. *Page 46: Absent is listed twice. It is in the Weak paragraph as well.*

Response: This typo will be corrected – thank you.

70. **Comment:** Indicator 8. *Recent Alluvial Deposits: To me, “recent” and “freshly deposited” in this category means the last 2-3 rain events. Can this be confirmed/clarified?*

Response: Yes. Recent in this context can be interpreted to mean in the last few bankfull events. Because the assessor may not be certain when the last such events occurred, language to help distinguish recent alluvium from older deposits is included in the section. Text will be changed to read “...left from the last 2-3 large rain events.”

71. **Comment:** Indicator 8. *Clarify categories with same word order for In-Channel and Bars/Benches: Strong – Both/And, Moderate – Mostly Both/And, Weak – Either/Or, and Absent – Neither*

Response: The Division chooses to retain the current language in the scoring categories under Indicator 8 for the present, since this was the only comment received that suggested a change.

72. **Comment:** Indicator 8. *Figure 17. Alluvial Deposition: The first thought on seeing the picture is that it is for a headcut or grade control feature. This may be confusing. Maybe you can note that “there is alluvial deposition noticeable below the headcut.”*

Response: Figure 17 will be revised to eliminate confusion.

73. **Comment:** Indicator 8. *Page 52/53: The wording of this indicator is slightly confusing. The first paragraph on 52 states “...deposited on bars or benches and in the stream channel or on the floodplain...”. While the indicators on page 53 clarify that it can be found in different locations within/around the stream. The way the first sentence on 52 is constructed makes it appear as though the deposition must occur on bars or benches within the stream channel, and that the floodplain deposition is separate from that.*

Response: The Division agrees. The language in the first paragraph of page 52 will be edited to be more congruent with the language under Strong on page 53.

74. **Comment:** Indicator 8. *Page 54: Figure 17. Should the description say “...or has not been colonized by plants.”?*

Response: The commenter is correct. The wording should be “...and has not been colonized by plants”. This change will be made.

75. **Comment:** Indicator 9. *Natural Levees: “Levees develop on the bank top adjacent to the...” – Should this say “on the top of the bank adjacent to the...”?*

Response: The wording will be changed to “at the top of the bank adjacent to the stream”.

76. **Comment:** Indicator 10. *Figure 18. Examples of Headcuts: Description references upper and lower photos, but the photos are side by side.*

Comment: Page 57: *Figure 18 Says Upper and Lower photos, should be Left and Right*

Response: This correction will be made – thank you.

77. **Comment:** *Metric [Indicator] 11 – Grade Control Point – Add language on how to score transient/temporary grade controls.*

Comment: Indicator 11. *Hoping that the manmade artificial structures would be described in the “weak” category even though slightly addressed in the narrative.*

Response: The existing language references grade controls “with moderate longevity” under Moderate, and “acting as short-term grade control” under Weak. The sentence “If the only grade control structures present are artificial, then score no higher than Weak” will be added to the text.

78. **Comment:** *Metric [Indicator] 11 – Grade Control Point – The formatting for the Strong definition is different from the other definitions.*

Response: This error will be corrected – thank you.

79. **Comment:** Indicator 11. *Page 59: The photos in this section do not appear to adequately show the features.*

Response: The Division welcomes any useful photographs of this or any other indicators.

80. **Comment:** *Metric [Indicator] 12 - Natural Valley or Drainageway is often underscored. Please add clarifying language to this section.*

Comment: Indicator 12. *P 60: Some additional clarity on what constitutes absent, weak, moderate, and strong indicator (include topographic maps and/or examples of differentiating scores). This indicator is taught as binary scoring in QHP training and has caused some confusion between consultants and TDEC in the field.*

Comment: Indicator 12. *P 60: “If it is obvious to the observer that the drainage contours slope naturally towards the channel and the direction of flow (upstream vs downstream) is readily apparent, then the investigator should score this feature as “Strong”. Only in cases where the surrounding drainage contours are indistinct, the direction of flow is not readily apparent, or when the drainage contours are clearly artificial, should the investigator consider a lesser score.” TDEC instruction on this indicator has been inconsistent, and this change to the Guidance is confusing and somewhat contradictory to the existing language still included in the manual. Existing training has been related to the shape and angle of the valley, and the presence of a ridgeline. Rather than adding more qualitative language that further confuses the indicator, TDEC should include instruction for differentiating between the scoring categories to clarify what constitutes Absent, Weak, Moderate, and Strong rather than instruct that all channels should be classified as Strong unless certain vague parameters are present. The TDEC published Field Guide has included descriptions for the scoring categories over multiple revisions. At a minimum, these should be included in the Guidance, or some revision to each of the scoring categories should be included.*

Comment: Indicator 12. p 60: *what's the point of having multiple scores if everything we score is going to be "strong"? If that's the case, this could essentially be a binary parameter like in indicators 13/19 (2nd order drainage/hydric soils), or we could attempt to define the scoring better... my premature attempt below...*

Strong - Surrounding land contours slope steeply toward the channel in a natural v- or u-shaped valley and the direction of flow is readily apparent. USGS map clearly indicates a topographic valley.

Moderate - Surrounding land contours slope toward the channel and the direction of flow can be ascertained, but v- or u-shaped valley is less readily apparent. Drainage area may be artificially altered from valley shown on USGS map.

Weak - Surrounding land contours are indistinct and may be artificial, and the gradient of the reach is such that the direction of flow may not be immediately apparent. USGS topographic map indicates little to no contour distortion indicative of a natural valley in the area of the assessed reach.

Absent - Channel is incised into an otherwise flat or convex land surface (e.g. floodplain, hilltop) where the surrounding area does not obviously drain towards the channel and the direction of flow may or may not be apparent or observable. USGS topo does not indicate a valley or drainageway.

Response: The course instructors believe that ‘degree of steepness’ is not an indicator of a stream. For example, many WWCs are located in steeper terrain than the streams to which they drain.

However there is no doubt that this indicator as written causes some confusion. One commenter above has thoughtfully provided a draft set of scoring categories that the Division finds very useful.

A version of this language will be imported into the text, and the last paragraph in the draft in this section will be deleted.

81. **Comment:** Indicator 13. *The narrative says that you have to have both map and field proof to document 2nd order streams, but only the USGS topo is required under the “YES” description. If you do have to have both the map and field observations, is the investigator expected to travel (walk/drive) upstream until they reach the other stream channel? This may create possible issues with property access.*

Comment: Indicator 13. *Page 61: Remove the addition of being able to determine first order streams in the field. This additional will cause confusion, and does not fall in line with scoring of the indicator.*

Comment: Indicator 13. *P.61: “First-order streams identified in the field may be counted in this metric even if they are not indicated on a map.” This seems counter-intuitive to me, given the definitions presented earlier in the Guidance. If a stream is “a surface water that is not a wet weather conveyance. [Rule 0400-4-3-.04(20)]” you would have to conduct the scoring on the upstream reaches to determine this. Does this require multiple HD’s conducted on one site to be conducted upstream to downstream to ensure that this parameter is scored correctly? What if there are potential first-order tributaries that are off-site? This seems problematic to enforce.*

Comment: Indicator 13. *p 61: "first-order streams identified in the field" -- do these need to be confirmed as streams with an official HD? Please clarify.*

Response: The Rule specifies “At least second order channel on [USGS] or [NRCS] map”. The section on Indicator 13 will be revised to reflect that determining 2nd order or greater by the referenced maps is the requirement of the Rule, but that field verification of order is recommended where significant alterations have occurred. If the assessor notes a significant discrepancy between the maps and field observations, it should be documented and the Division consulted.

82. **Comment:** Indicator 14. Page 63. Reads “Note:...Score as ‘NA’ if being evaluated within 48 hours of a significant rainfall.” Commenter recommends: *No HDs within 48 hours of significant rainfall.* (para)

Comment: Indicator 14. *Has the following language “score as NA if being evaluated....” Please clarify that scoring “NA” is acceptable even if it allows for a lower overall score.*

Response: The Rules specifies that no HDs should be conducted within 48 hours of a 1-inch in 24 hour rainfall, therefore QHPs cannot submit an HD conducted under those conditions seeking treatment under the Rule. Assessors are strongly discouraged from conducting HDs within 48 hours of any significant precipitation. The language will be updated accordingly. See also response to Comment #19.

83. **Comment:** Indicator 14. *NRCS weblink on page 63 seems to be bad.*

Response: The link will be updated – thank you.

84. **Comment:** *Metric [Indicator] 15 - Water in Channel and > 48 Hours Since Last Significant Rainfall. Make the language stronger in Metric 15 so that people are not intentionally collected data within 48 hours of a rainfall to score NA for this metric. Add the phrase “Any determinations conducted within 48 hours of a rainfall will be considered provisional”.*

Comment: Indicator 15. *Page 63/65: The Note stating to score as NA if being evaluated within 48 hours of significant rainfall could be used to deliberately lower a score. We need to either state exactly what a significant rain event is (>1 inch in 24 hours, as stated on page 14) or need to have a note stating that by selecting NA and if it directly impacts the call, (i.e. a score of 17/18 etc, there is water in the photos, and they selected NA) then TDEC can request that they go back out and re-evaluate the feature under more normal weather conditions. And/or that the application can be deemed incomplete.*

Response: See responses to Comments #19 and #82. Language will be added to clarify the commenters’ valid concerns, and a definition of ‘significant rain event’ will be added.

85. **Comment:** Indicator 15. *P. 65: [text reads] “Significant precipitation is defined as enough precipitation to potentially affect the investigators ability to accurately score this metric.” This should be defined by a quantitative value. This metric can be highly subjective and an assigned value would avoid further confusion or differentiation between individuals on what constitutes significant.*

Comment: Indicator 15. *p 65: “Significant precipitation” this definition is vague and would benefit from quantitative information.*

Comment: Indicator 15. *[Significant precipitation]...is already defined as one inch in a 24 hour period.*

Comment: Indicator 15. *Significant Rainfall is defined on page 30 as >.1 inches; would this also be related to Water in Channel and > 48 Hours Since Last Significant Rainfall on page 65 or stick with “ Significant precipitation is defined as enough precipitation to potentially affect the investigators ability to accurately score this metric.”?*

Comment: Indicator 15. *P. 65: “Significant precipitation is defined as enough precipitation to potentially affect the investigators ability to accurately score this metric.” This metric should be defined by a quantitative value. Further qualitative exposition doesn’t avoid confusion over when the precipitation is significant enough to score the category as “Not Applicable.” [Also – apostrophe]*

Response: The language on page 30 under primary indicator 8 applies only to the 7 day period referenced in that primary indicator. The Division understands the desire to define significant precipitation under the secondary indicators with a quantitative value. However, what constitutes a significant rainfall that could affect an assessors scoring varies with the conditions. An event of 0.2 inches during a long hot dry period would likely be irrelevant to an HD – it would soak into the ground and/or evaporate so fast that unless the assessor was scoring immediately following the rain it would have no effect on the indicators. The same 0.2 inches when the ground is already saturated from heavy rains 3 days ago would likely result in significant runoff. For these reasons we have been reluctant to ‘pick a number’. Revisions as discussed under Comments #19 and #82 should resolve this issue, and an improved (but still non-quantitative) definition will be substituted on page 65.

86. **Comment:** Indicator 16. *Leaf Litter: Please clarify that scoring “NA” is acceptable even if it allows for a lower overall score.*

Comment: Indicator 16. *The absence of leaf litter is currently scored as “not applicable” during the months of October-December. The lack of leaf litter in the bottom of a watercourse during October-December should be considered an even stronger indicator of frequent flow/downstream transport because downstream transport of more leaves > downstream transport of less leaves. If this can’t be changed, it can be a point of emphasis to inform BPJ.. maybe a note to the effect of:*

“During the months of October-December, investigators should take into account that a watercourse with a thalweg that is visible or swept clear of leaf litter may be exhibiting streamlike characteristics despite receiving a “Not Applicable” score for this secondary indicator.”

Response: The Division agrees that the heading on the field data sheet for indicator 16 is not congruent with the language in the guidance. The parenthetical “(January- September) will be deleted from the field data sheet, and any guidance for scoring this Indicator as ‘NA’ during those months will be removed. This Indicator can be scored year-round, with cautionary language about scoring during leaf-fall months revised. As the commenters point out, if the leaves during that time of year have been swept from the thalweg, it should be scored as valuable secondary evidence.

87. **Comment:** Indicator 17. *Sediment on Plants or Debris: Why has “organic” been added to all of the debris references? In urban streams, I can find relatively stationary pieces of trash (tires, bikes, shopping carts, etc.) and definitely floatable trash (balls, bottles, bags) that has indication of sediment deposition.*

Comment: Indicator 17. *Page 67: Sediment on Plants or Debris. The word organic was added to the description of debris. What about trash in urban environments? Does this metric only include organic debris? On Page 69, Organic Drift Piles is defined and it includes trash. Either organic should be removed or add information that trash can be included.*

Response: The intent was to exclude loose detritus that could be blown or thrown into a channel. However, non-natural materials that are ‘caught’ on snags in a manner which makes it clear they have been part of the flow dynamics of the channel can certainly be used as surrogates under this indicator. A sentence to that effect will be added. (Plastics are technically organic, just non-natural. The term ‘organic’ was originally used to exclude the mineral bedload/substrates).

88. **Comment:** Indicator 17. *Say “channel margins”, not “stream margins”*

Response: This change will be made – thank you.

89. **Comment:** Indicator 17. *Strong category – Do not put a comma after channel. Highlight that to get strong it must be within the channel AND on the channel (not stream) margins.*

Response: The comma will be removed as the commenter suggests, which will clarify that both characteristics are needed for a rating of Strong.

90. **Comment:** Indicator 18. *Organic Drift Piles and Drift Lines: Does the material have to be “organic”? Urban watersheds can provide large amounts of inorganic material that functions like leaf litter and/or sticks.*

Response: No, other materials can also be considered. The first sentence under indicator 18 states “Organic drift is defined as twigs, sticks, logs, leaves, trash, plastics, and any other floating materials...”

91. **Comment:** Indicator 18. *Page 70: TDOT recommends defining the term “high water mark” [in the description of ‘Strong’].*

Response: The Division believes that the meaning is clear from the context of the paragraph.

92. **Comment:** Indicator 19. *Hydric Soils: Page 73 is a little confusing to read. Maybe put Figure 23 at the top of the page and then combine the YES/NO scoring narrative with Table 5. When doing this, make the descriptions line up because one part says samples are to be taken in the stream bank and base of headcuts, but the other section references thalweg.*

Response: The wording will be changed to “at or below streambed elevation” and made consistent throughout the text. Table 5 will be deleted.

93. **Comment:** Indicator 19. *Page 72/73: Since this is a Yes/No indicator, are they allowed to go halfway between (i.e. giving a score of 0.75)?*

Response: Yes. If hydric soils are found in just one location in the segment, for example, or if indicators of hydric soils are weak and difficult to find, then the assessor may opt for a score in between the 2 categories given. Guidance language for scoring in-between the Yes/No categories will be added.

94. **Comment:** Indicator 19. *p. 72: Either use “gleyed soils” or “grey soils;” I don’t think “greyed” is a term most soil scientist use and it seems a poor mashup of two perfectly descriptive words.*

Comment: TDOT recommends changing the term “greyed soils” to “gleyed soils”.

Response: The term “greyed” appears only once in the text. It will be deleted to avoid confusion. The term ‘gleyed’ had been avoided because true gleyed soils are rare in our area.

95. **Comment:** Indicator 19. *Hydric Soil: Soil color should be a requirement and a blank included on form.*

Response: A statement will be added to text specifying that hue and chroma values should be included in all HD submittals where soils are examined (some channels have no soils suitable for cores to be taken).

96. **Comment:** Indicator 20. *Page 74-77: Fibrous Roots and Rooted Plants indicators need to have regional specific information on how to handle these indicators in bedrock streams. The Note stating to select NA if there is not substrate suitable for roots/plants, can cause these streams to be underscored in the drier months. As these would be the only biological indicators when the stream is dry, which can occur for months in this area.*

Response: The Division is aware of the scoring difficulties in some bedrock channels, mostly in the 71i subregion. Staff is currently working on regional guidance for this area, which will be noticed for comment when ready. See also response to Comment #65. In the meantime guidance language will be added to Indicators 20 and 21. Sufficient flow to keep the bedrock clear of soil and terrestrial rooted plants is a useful indicator of flow. For both Indicators assessors should concentrate their efforts on the breaks and cracks between bedrock plates, where small substrate gathers and plants and roots may be present.

97. **Comment:** Indicator 21. *Rooted Plants in Streambed: Why are we using the word “streambed” instead of “channel”? In the categories of weak to strong, the terms “bed of watercourse” and “baseflow channel” are used, as well as “non-hydrophytic”. These terms should be used in the narrative, too. Wording, word order, and sentence structure for the scoring categories needs more consistency.*

Response: The text will be altered to use the term “channel” consistently. The commenter is correct that the current text uses “stream” or “stream bed” in multiple sections, which is incorrect.

98. **Comment:** Indicator 21. *Figure 25. Rooted Plants In Channel: No description of the pictures. Are these examples of strong and weak?*

Response: No. The photos are simply general examples of rooted plants in channel. HD scoring is a reach-based methodology, and photos depicting a 15-20 foot section of a channel are not necessarily indicative of a scoring category.

99. **Comment:** Indicator 21. *Page 76-77: This section states that focus should be on presence of FAC or drier plants in bed or thalweg; however, what constitutes a score of “strong” states UPL or FACU. This is interpreted to mean if FAC plants are present, then a score of “strong” is not allowed. TDOT recommends adding further clarification to determine if that is the intent.*

Response: The text on page 76 refers to the overall focus of the Indicator; the language under the scoring categories is specific. Language in both will be revised for consistency of terms and elimination of apparent incongruity.

100. **Comment:** Indicator 22. *Under section 22. Crayfish of the HD guidance, should there be more of a blurb about presence of crayfish stacks? I know there is already a sentence in the main paragraph but I keep seeing people count crayfish stacks as weak or moderate when they haven’t even seen a crayfish in the stream itself. Maybe something under the scoring section of Absent – (including presence of crayfish stacks but no crayfish observed)?*

Comment: Indicator 22. *Crayfish, page 79- It may be helpful to state whether or not crayfish are observed as opposed to observability of "the characteristic." This way the scorer may be less likely to consider chimneys since the word "crayfish" is in the metric.*

Response: The text currently states “The presence of chimneys should not be considered for this metric, but rather the presence of crayfish within the thalweg area of the streambed”. The text will be changed to be more explicit: “The presence of crayfish holes or chimneys alone should not contribute any points under this indicator (score as ‘absent’), only the presence of actual crayfish observed within the channel thalweg should be counted.”

101. **Comment:** Indicator 24. *Salamander larvae should register an automatic moderate/strong at 2-3 points, as studies (Johnson et al. 2009) indicate that regardless of age salamander larvae suggest at least intermittent flow. Additionally, more specific guidance could be given:*

Absent (no presence observed)

Weak - Indirect evidence (E.g. frog calls, squeaks, or splashes observed)

Moderate - Direct evidence observed but rare or requires significant effort to observe (E.g. observations of one or more adult, egg mass, or larvae)

Strong – Direct evidence easily observed (E.g. observations of several larvae, adult amphibians, or egg masses)

Comment: Indicator 24. *Amphibians: Does a frog call count as “finding”? Walking up on a channel and hearing a bunch of frogs (especially multiple species) could be considered as weak to weak+ because it meets the criteria of “if only adults are found in the riparian areas, score lower.”*

Response: The word “amphibian” will replace “gilled” under Strong, thus including both gilled and non-gilled immatures. The Weak sentence will be amended to include “...or indirect evidence such as frog calls, squeaks, and splashes.”

102. **Comment:** Indicator 24. *Page 81: The scoring should look more like the General scoring guideline used in the other biological indicators. There at least needs to be the same timeframes included, stating how long intensive searching/etc is.*

Response: A timeframe reference similar to the general scoring categories will be added. However, the general guidance in Table 3 is intended to apply to all Indicators. Text will be amended to reflect this.

103. **Comment:** Indicator 25. *Benthic Macroinvertebrates, page 83- Would you consider defining “few”? I consider few as 3-4, and several as 5-7, but I've noticed differences in this on scoring in the past. For example, would 2 individuals from 3 taxa be considered moderate?*

Response: No, 2 individuals from 3 taxa would not meet the intent of the wording under Moderate. The intent is to equate with common usage: Few = 3-4, Several = >4, Many = enough that there is no need to count them. The word ‘many’ is not used in the text to refer to taxa, only individuals.

104. **Comment:** Indicator 25. *Page 83: Remove “...such as mosquitos...” from the Note above the photos. Unlikely that those doing the investigations will know what mosquito larvae will look like and may mistake these for another species.*

Response: The Division finds that an example of a common fast-developing larva is appropriate here. Many assessors are unfamiliar with benthic, fish, and hydric plant taxa; it is incumbent on them to utilize expertise in identification for several primary and secondary indicators.

105. **Comment:** Indicator 26. *Page 85: TDOT Recommends changing the “and” in the Moderate category to be “or”. Currently, there has to be filamentous algae present in order to score moderate but not to score strong. There's a possibility for just a periphyton presence (which is common in middle TN) to score strong but not moderate.*

Response: The Division agrees and will make that change.

106. **Comment:** Indicator 26. *Page 84: TDOT recommends further clarification to eliminate possible conflict between the above note and the scoring criteria. In a situation where algae are only found in small isolated patches, the note instructs the user to disregard and the score is “absent”. However, the conditions described in the criteria identified as “weak” match this situation. In this situation it is unclear if the score should be “Absent” or “Weak”.*

Response: The note at the bottom of page 84 will be deleted to eliminate the perceived conflict.

107. **Comment:** Indicator 27. *Iron Oxidizing Bacteria/Fungus: The title uses the word fungus, but it is not mentioned at all in the description. Figure 29 only has a description for one of the pictures.*

Response: The word “fungus” will be deleted from the title. The note under Figure 29 will be deleted.

108. **Comment:** Indicator 28. *Page 87-88: The wording in the first paragraph strongly suggests the focus here should be on OBL and FACW species. The scoring considerations confirm this, as FAC is never included in any of the score indicators here. However, the photos further in Section 28 show a photo of *Microstegium vimineum*, which is FAC. To avoid confusion, TDOT recommends removing this photo since it is not OBL or FACW. Furthermore, this plant grows in many moist and well shaded uplands and along roadways. It is not a good indicator that a wetland is present.*

Response: The photos in Figure 30 will be reviewed and revised as needed.

109. **Comment:** Indicator 28. *Page 88: Photo of Japanese Stiltgrass should be removed. Stiltgrass is FAC, all the others are examples of FACW/OBL.*

Response: The photo of stiltgrass under Figure 30 will be removed.

110. **Comment:** Indicator 28. *Figure 30. Hydrophytic Vegetation: Pictures are too small.*

Response: The Division agrees and the photos will be revised.

111. **Comment:** Indicator 28. *Page 89: TDOT recommends changing the spelling to “*Persicaria lapathifolium*” in the picture shown to the left [upper left photo in Figure 30].*

Response: This typo will be corrected – thank you.

Commonly Encountered HD Variants – General Policy Guidelines

112. **Comment:** *We need better clarification on best professional judgement and when to use best professional judgement in streams where you cannot score all of the secondary indicators. Especially when there are seasonal issues with the scoring of primary indicators.*

Response: Staff are working on additional guidance specific to some regional scoring problems, such as bedrock channels in subregion 71i. These issues are largely seasonal and QHPs are advised to conduct HDs during the wetter times if at all possible. Any new guidance will be noticed for comment when ready. However, QHPs must keep in mind that this is guidance, not rule, and that no amount of guidance can eliminate the need for best professional judgement.

113. **Comment:** *Add guidance for specific ecoregions such as the deeply incised, channelized streams of West Tennessee.*

Response: Some additional guidance will be added in this version for scoring bedrock channels. The Division will be gathering hydrology and soils expertise in 2020 to explore regional guidance for channelized west TN features, and welcomes welcome specific suggestions. See also response to Comment #48 .

114. **Comment:** *Add guidance for dealing with difficult systems such as the WPA channels in the Chattanooga area.*

Comment: *Would it be possible to address the WPA channels in the CHEFO area in this section? I would like to somehow point out that these are not automatically WWCs.*

Response: Historically altered channels like these are generally discussed under this section of the Guidance. In culverted or concrete-lined segments where most of the geomorphological indicators have been eliminated, assessors will have to rely on hydrology, historic information, less altered upstream or downstream segments, or even adjacent channels of similar watershed size to make a determination. The Division will attempt to add additional helpful language under ‘Historic and Recent Alterations.

115. **Comment:** *Page 94: Photo description “Recent – via bulldozer...” replace with heavy equipment or mechanized disturbance.*

Response: The wording will be changed to “mechanized disturbance”.

116. **Comment:** Page 92, 3rd paragraph. Current text reads “...the feature may not be waters of the state”. Commenter asks: *Can we be more definitive and say “is not”[waters of the state]? (para)*

Response: While the commenter’s interpretation will be correct in most cases, there are scenarios in which the feature could be jurisdictional waters, so the wording will be left as written.

117. **Comment:** Page 92, 4th paragraph. Commenter suggest changing text as follows: “...are very important variants, ~~and~~ that can present significant obstacles...” (para)

Response: The suggested change will be made to improve sentence structure.

Miscellaneous

118. **Comment:** *Can we get rid of all the illustration/photo credits? At least the ones from TDEC staff?*

Comment: *Remove credited names for photos or move them to an appendix.*

Comment: *General – Remove the “Photo courtesy of...” from underneath every photo. Put at the end in an appendix, or at least make the text much smaller.*

Response: Credits for photos taken by TDEC staff will be deleted and added to the list of acknowledgements as contributors. Those imported from other sources must remain, but the text can be made smaller.

119. **Comment:** *In photo captions remove references that are not relevant to the indicator being discussed (E.g. “Figure 19. Examples of Grade Controls” noting “Additionally, recent alluvial deposition may be seen in this photo”.)*

Response: Some photos are intended to be useful for more than one indicator.

120. **Comment:** *There are several instances in the draft guidance where the language in photo captions is not consistent with the language used in the guidance (E.g. "Figure 7. Example of ill-defined bed and bank" should say "Example of a weak bed and bank")*

Comment: *Generally – I feel that the photos should be moved to an appendix or associated document with examples of weak, moderate, and strong scoring streams. If we aren't comfortable enough with our own guidance documents to label the examples provided as weak/moderate/strong then photos/captions should be left out of the guidance document altogether.*

Response: Photo descriptors will be changed to match guidance categories where appropriate and unlikely to create further confusion. However, QHPs are cautioned against over-reliance on the photos. It is impossible for the Guidance document to provide truly representative photos of all categories for all indicators, or for all the different channel types across the state.

121. **Comment:** *Page 99 references: First 3 weblinks are bad; all need to be updated. Last weblink is to Wikipedia.... Surely, TDEC can find a better reference than an open editing source.*

Response: All weblinks will be updated or deleted – thank you. The reference to Wikipedia will be removed from the References.

Comments Expressing General Support

122. **Comment:** *I like the improvements you made to the HD Guidance Manual. I know it was a lot of work to go through that whole thing. You have added clarity to several areas that really needed it. Should be a bit easier to use now. Anyway, Good work.*

123. **Comment:** *I looked over the Guidance for Making Hydrologic Determinations and HD Field Data Sheet drafts, and other than my appreciation for the clarifications, I have no further comment.*

124. **Comment:** *I am very pleased with 99% of the changes associated with HDT v1.5. You were kind enough to solicit my comments, and I appreciate being able to be a part of the process. Most of my comments (attached) are based on administrative components; you guys have done a great job with the science.*

125. **Comment:** *Thank you for the opportunity to comment on the proposed Hydrologic Determination Guidance changes.*

126. **Comment:** *Thank you for reaching out to the QHP-IT community for comments.*

127. **Comment:** *I have reviewed the draft HD Guidance Manual. I think the changes are good overall.*

128. **Comment:** *Thanks for all your work on this.*